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(10) Patent No.:

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(45) Date of Patent:

*Jan. 16, 2001

(54) HIGH THROUGHPUT SCREENING FOR NOVEL ENZYMES

(75) Inventors: Jay M. Short, Encinitas; Martin Keller, San Diego, both of CA (US)

(73) Assignee: Diversa Corporation, San Diego, CA

(US)

(*) Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

This patent is subject to a terminal disclaimer.

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(22) Filed: Jun. 16, 1998

Related U.S. Application Data

(51)	Int. Cl. ⁷		C12Q	1/68
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		435/471; 435/476; 435/320.1

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(57) ABSTRACT

Disclosed is a process for identifying clones having a specified activity of interest, which process comprises (i) generating one or more expression libraries derived from nuclei acid directly isolated from the environment; and (ii) screening said libraries utilizing a fluorescence activated cell sorter to identify said clones. More particularly, this is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; (ii) exposing said libraries to a particular substrate or substrates of interest; and (iii) screening said exposed libraries utilizing a fluorescence activated cell sorter to identify clones which react with the substrate or substrates. Also provided is a process for identifying clones having a specified activity of interest by (i) generating one or more expression libraries derived from nucleic acid directly or indirectly isolated from the environment; and (ii) screening said exposed libraries utilizing an assay requiring co-encapsulation, a binding event or the covalent modification of a target, and a fluorescence activated cell sorter to identify positive clones.

23 Claims, 16 Drawing Sheets